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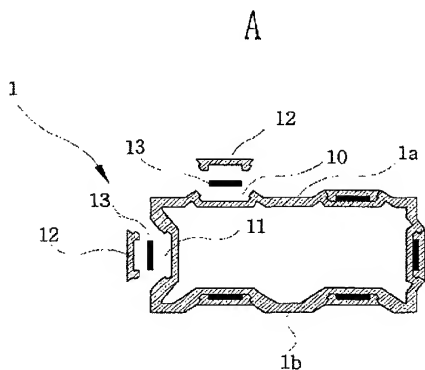
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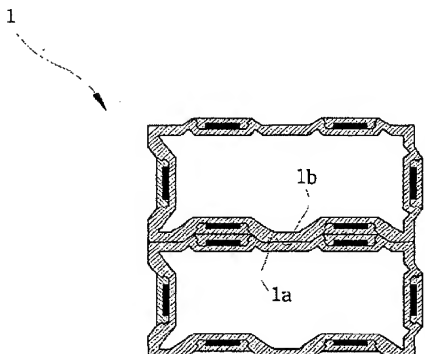
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(54) Title: BUILDING BLOCK TOY SET



B



(57) Abstract: The present invention relates to an assembling type block toy in which each unit block is assembled in such a manner that matching sides with a convex-concave structure and magnet are matched and engaged. The assembling type block toy includes a plurality of unit blocks which each have a concave-convex structure corresponding to each other and a matching side with a magnet of an opposite polarity and which is assembled and disassembled based on the concave-convex structure and a magnetic force of an opposite polarity magnet in such a manner that the corresponding matching sides are matched one another, a plurality of block links which are implemented in such a manner that two link blocks having the matching sides with a concave-convex structure and magnet corresponding to each matching side of the unit block at a front end are relatively rotatable to each other, and a block wheel which includes an engaging member having a matching side with a concave-convex structure and magnet corresponding to the matching side of each block in one side, and a rotating member which is engaged to a surrounding portion of the engaging member for thereby being rotatable along a circumference of the engaging member.

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# BUILDING BLOCK TOY SET

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The present invention relates to an assembling type block toy which is capable of making various shapes by assembling a plurality of unit blocks, and in particular to an assembling type block toy in which each unit block is assembled in such a manner that matching sides each having a convex-concave structure and a magnet are matched.

### 2. Description of the Background Art

Generally, a conventional assembling type block toy set is formed of cubic unit blocks each having a corresponding matching surface with a force fit convex-concave structure in a male and female structure corresponding to opposite both sides.

Therefore, the unit blocks are matched with their matching sides and are pressurized in an engaging direction, so that a matching side concave-convex structure of one side unit block is force-fit to a matching side concave-convex

structure of another unit block. Therefore, a plurality of unit blocks are sequentially assembled in the above manner for thereby forming a certain shape like a robot, etc.

However, in the conventional assembling type block toy set, since the  
5 matching side convex-concave structure of each unit block is designed to be force-fit by a certain pressurizing force so that the unit blocks are assembled and then are not easily disassembled, a large pressurizing force is required for assembling the unit blocks. Therefore, in the conventional art, it is not easy to assemble and disassemble. Therefore, it is very difficult for children or baby who have a small  
10 grasping force to assemble and disassemble the unit blocks, so that it is impossible to make a certain shape using the unit blocks.

### **SUMMARY OF THE INVENTION**

Accordingly, it is an object of the present invention to provide an  
15 assembling type block toy which overcomes the problems encountered in the conventional art.

It is another object of the present invention to provide an assembling type block toy which is capable of easily assembling and disassembling unit blocks in such a manner that each unit block is matched and engaged based on a convex-

concave structure of a simple insertion structure and a magnetic force of a magnet, and it is possible to make various shapes by providing a block wheel which may express a rotating member like a wheel except for a simple polygonal unit block and a block link which may express a joint or link.

5           To achieve the above objects, there is provided an assembling type block toy which includes a plurality of unit blocks which each have a concave-convex structure corresponding to each other and a matching side with a magnet of an opposite polarity and which is assembled and disassembled based on the concave-convex structure and a magnetic force of an opposite polarity magnet in  
10 such a manner that the corresponding matching sides are matched one another, a plurality of block links which are implemented in such a manner that two link blocks having the matching sides with a concave-convex structure and magnet corresponding to each matching side of the unit block at a front end are relatively rotatable to each other, and a block wheel which includes an engaging member  
15 having a matching side with a concave-convex structure and magnet corresponding to the matching side of each block in one side, and a rotating member which is engaged to a surrounding portion of the engaging member for thereby being rotatable along a circumference of the engaging member.

At this time, in a state that each magnet is mounted in a mounting groove

formed in each matching side, the magnet is force-fit in the mounting groove by a cap.

In a preferred embodiment of the present invention, the unit block is hexahedron, and each unit block includes a matching side corresponding to at least two sides opposite to each other.

In addition, the horizontal and vertical sizes and height of each unit block have a fixed number of magnification, and the unit blocks are formed of the unit blocks of a plurality of groups in which at least one of the horizontal and vertical sizes and height is increased at a fixed number magnification by the unit of group.

In addition, at least one link block of the block link is engaged to another link block to be rotatable with respect to a center shaft of the same.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will become better understood with reference to the accompanying drawings which are given only by way of illustration and thus are not limitative of the present invention, wherein;

Figure 1 is a perspective view illustrating an example of a structure made using an assembling type block toy according to an embodiment of the present invention;

Figure 2 is a perspective view illustrating another example of a structure made using an assembling type block toy according to an embodiment of the present invention;

Figure 3 is a perspective view illustrating a unit block which forms an assembling type block toy according to an embodiment of the present invention;

Figure 4A is a cross-sectional view taken along line IV-IV of Figure 3;

Figure 4B is a cross-sectional view of a matching side of a unit block of an assembling type block toy according to an embodiment of the present invention;

Figure 5 is a perspective view illustrating another example of a unit block which forms an assembling type block toy according to an embodiment of the present invention;

Figure 6 is a perspective view illustrating further another example of a unit block which forms an assembling type block toy according to an embodiment of the present invention;

Figure 7 is a perspective view illustrating a block wheel of an assembling type block toy according to an embodiment of the present invention;

Figure 8 is a cross-sectional view illustrating a block wheel of an assembling type block toy according to an embodiment of the present invention; and

Figure 9 is a perspective view illustrating a block link of an assembling type block toy according to an embodiment of the present invention.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

5        The construction and operation of an assembling type block toy according to a preferred embodiment of the present invention will be described with reference to the accompanying drawings.

As shown in Figures 1 and 2, the assembling type block toy according to an embodiment of the present invention includes a cubic unit block 1 which is used  
10    for forming a basic structure, a block wheel 2 which is adapted to form a certain rotating member like a wheel, etc. and a block link 3 which is adapted to express a joint or link of a robot.

At this time, the unit block 1 is a basic element of an assembling type block toy according to the present invention and is formed in a cubic shape as  
15    shown in Figure 3. The length, namely, horizontal size, vertical size and height of the same has a fixed number magnification to each other.

The unit block 1 is provided in multiple groups each formed in a few number or tens number which has the same horizontal and vertical sizes and height. As shown in Figures 3 and 6, the unit blocks have the fixed number



magnification in at least one of their horizontal and vertical sizes and heights.

In each unit block 1, the matching sides 1a and 1b are installed in such a manner that the upper and lower sides or left and right sides are formed in pair and are matched with the corresponding matching sides of another unit block  
5 based on at least two corresponding structures.

The matching sides 1a and 1b which are formed in pair have a convex-concave structure which is a corresponding shape. A magnet 13 is embedded in the interior of each matching side to have the opposite polarity. In the case of the assembling type block toy according to the present invention, as shown in Figures  
10 4A and 4B, the magnets 13 are installed in the mounting grooves 10 and 11 formed in each matching side 1a and 1b, and the magnets 13 are contacted with the matching sides 1a and 1b by a cap 12 which is force-fit to the mounting grooves 10 and 11.

The unit blocks 1 are matched with their corresponding matching sides  
15 1a and 1b and are assembled in a convex-concave structure of the matching sides 1a and 1b and by a magnetic force of each magnet 13 as shown in figure 4B for thereby forming a certain structure as shown in Figures 1 and 2.

In the assembling type block toy according to the present invention, the sizes and shapes of the unit blocks 1 may be cuboid as shown in Figure 3 or cubic

as shown in Figures 5 and 6 or a plate shaped hexahedron based on a user's age or difficulties of the formation.

In addition, in the case of the magnets attached to the matching sides of each unit block, the magnets may be attached using a cap according to an embodiment of the present invention. In another embodiment of the present invention, the magnets may be attached to the matching sides using an adhesive or may be embedded in the interior of the matching sides.

As shown in Figures 7 and 8, the block wheel 2 includes an engaging member 20 which has a matching side 20a with a convex-concave structure and magnet in its one side for an engagement with the matching sides 1a and 1b of the unit block 1, and a wheel type rotation member 21 which is rotatably engaged to a surrounding portion of the engaging member 20. In the above construction, as shown in Figure 1, the block wheel 2 is engaged to the unit block 1 for thereby forming a rotating member like a wheel.

As shown in Figure 9, the block link 3 is implemented in such a manner that two link blocks 30 and 31 having the matching sides 30b and 31a with a convex-concave structure and magnet in the front side are linked to each other in the rear sides. One of the link blocks 30 and 31 is engaged with one unit block 1 of the unit block assembling unit for thereby forming a certain structure like a link or

joint.

As shown in Figure 2, in the unit block assembling unit formed in a shape of robot, the block link 3 expresses an arm joint of the robot. As shown in Figure 9, in an embodiment of the present invention, each link block 30, 31 of the block link  
5 3 is linked each other by the engaging member 32 and the pin 33. One of the link block 31 may be constructed to be rotated about the center shaft.

The assembling type block toy according to an embodiment of the present invention includes a unit block 1 which forms a basic structure, a block wheel 2 which forms a rotating member like a wheel, etc. and a block link 3 which is freely  
10 bent like a joint. The matching sides 1a, 1b, 20a, 20b, 30a, and 30b are matched one another. Each matching side may be continuously engaged one another based on the convex-concave structure which guides an easier engagement. Therefore, it is easy to assemble and disassemble.

In addition, in the present invention, since there are provided the block  
15 wheel 2 which may express a rotating member like a wheel of a vehicle except for the unit block which forms a basic structure, and the block link 3 which may form a joint for an arm and leg of an animal, robot or human or a link structure of a mechanical apparatus for an excavator. Therefore, the present invention may be very widely adapted for making various structures.

As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described examples are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the meets and bounds of the claims, or equivalences of such meets and bounds are therefore intended to be embraced by the appended claims.

**What is claimed is:**

1. An assembling type block toy, comprising:

a plurality of unit blocks which each have a concave-convex structure corresponding to each other and a matching side with a magnet of an opposite polarity and which is assembled and disassembled based on the concave-convex structure and a magnetic force of an opposite polarity magnet in such a manner that the corresponding matching sides are matched one another;

a plurality of block links which are implemented in such a manner that two link blocks having the matching sides with a concave-convex structure and magnet corresponding to each matching side of the unit block at a front end are relatively rotatable to each other; and

a block wheel which includes an engaging member having a matching side with a concave-convex structure and magnet corresponding to the matching side of each block in one side, and a rotating member which is engaged to a surrounding portion of the engaging member for thereby being rotatable along a circumference of the engaging member.

2. The block toy of claim 1, wherein in a state that each magnet is mounted in a mounting groove formed in each matching side, said magnet is force-fit in the

mounting groove by a cap.

3. The block toy of claim 1, wherein said unit block is hexahedron.

5 4. The block toy of claim 1, wherein at least one link block of the block link is engaged to another link block to be rotatable with respect to a center shaft of the same.

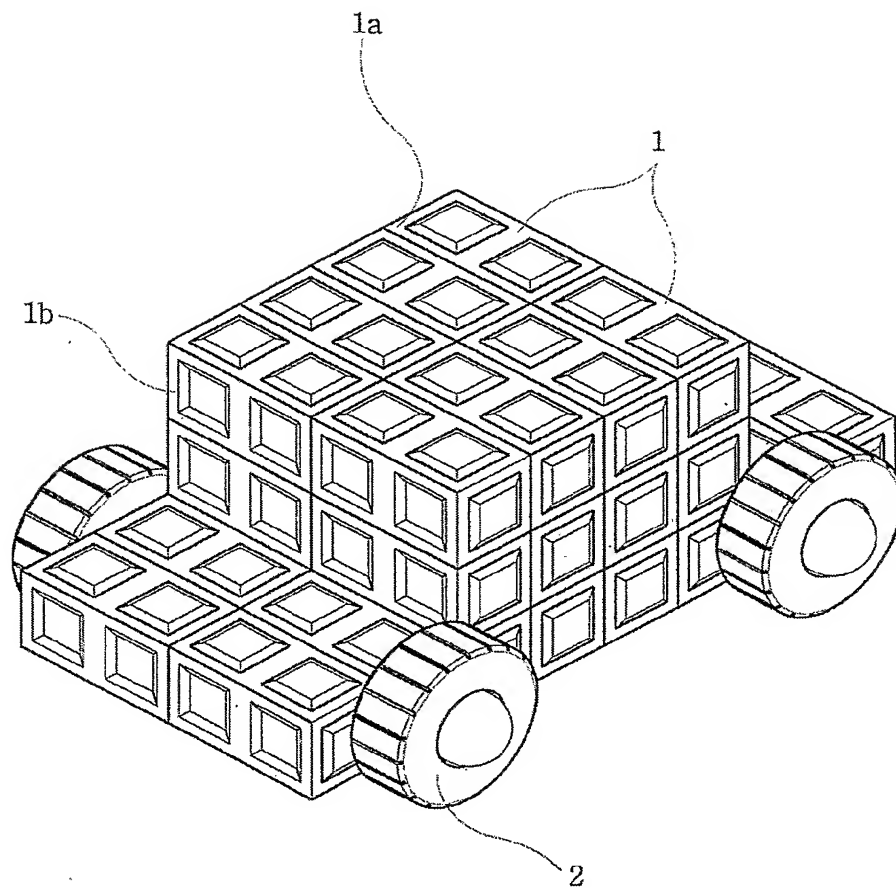
5. The block toy of claim 1, wherein said each unit block includes a matching  
10 side corresponding to at least two sides opposite to each other.

6. The block toy of claim 1, wherein the horizontal and vertical sizes and height of each unit block have a fixed number of magnification.

15 7. The block toy of claim 5, wherein said unit blocks are formed of the unit blocks of a plurality of groups in which at least one of the horizontal and vertical sizes and height is increased at a fixed number magnification by the unit of group.

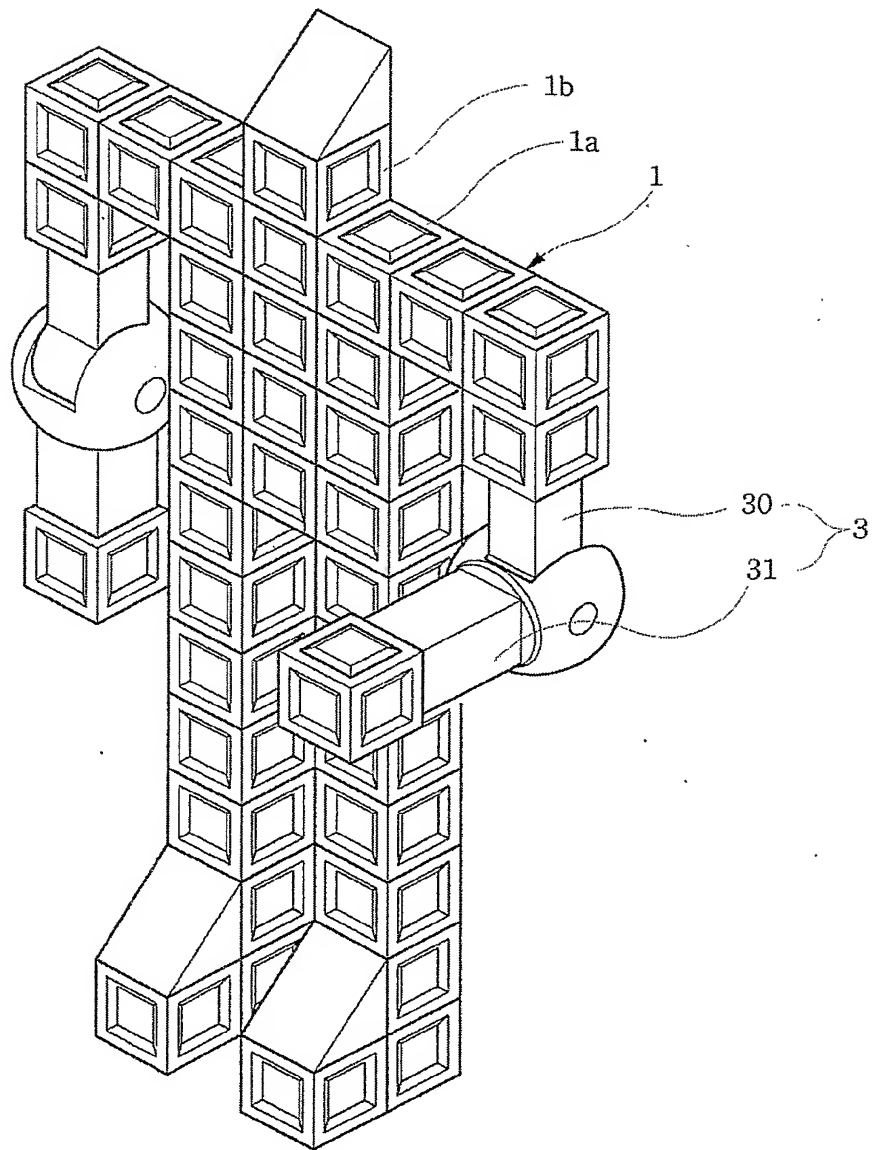
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FIG. 1



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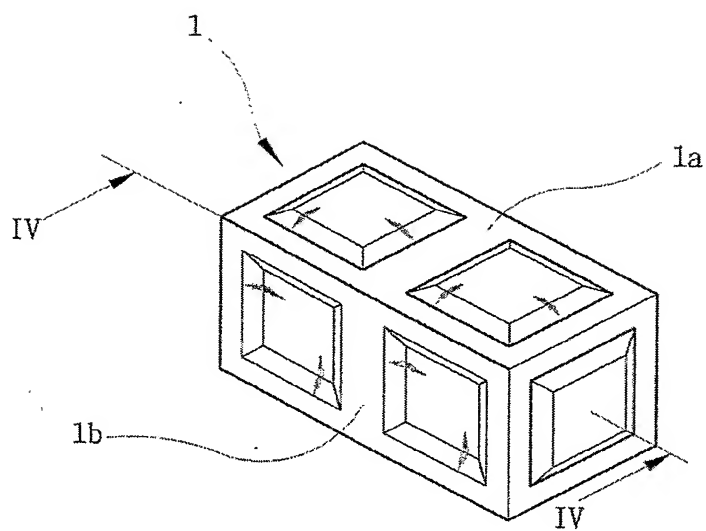
FIG. 2





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FIG.3



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FIG. 4A

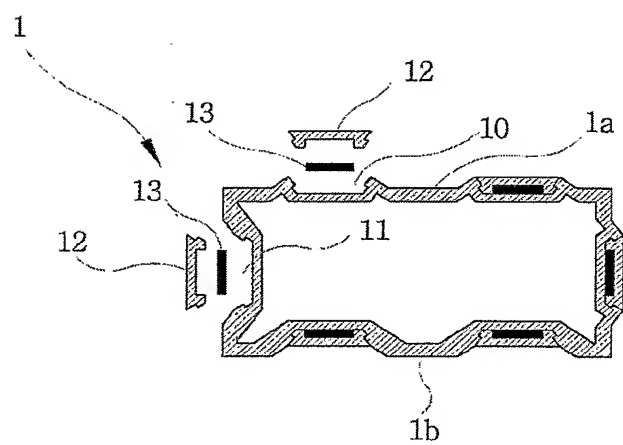
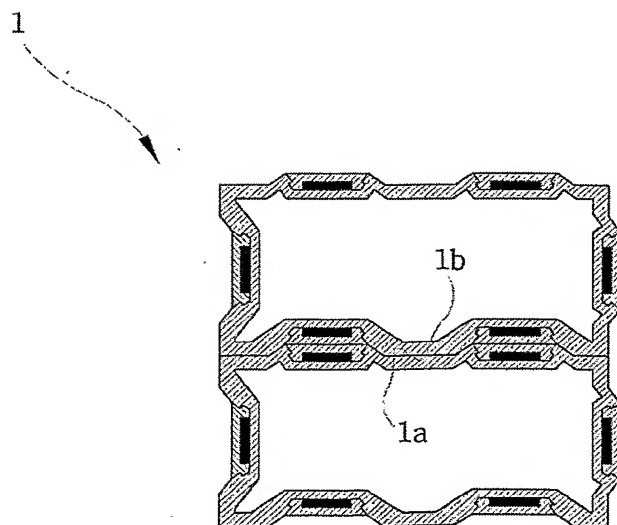


FIG. 4B



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FIG.5

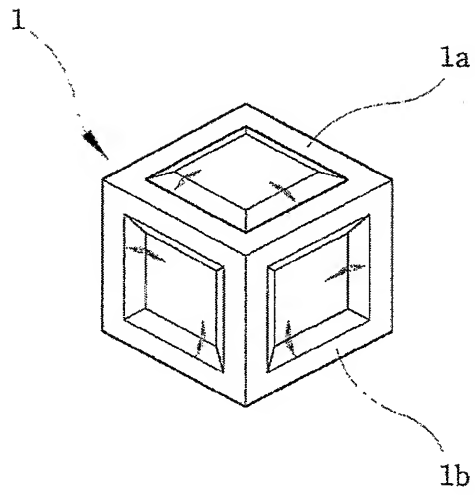
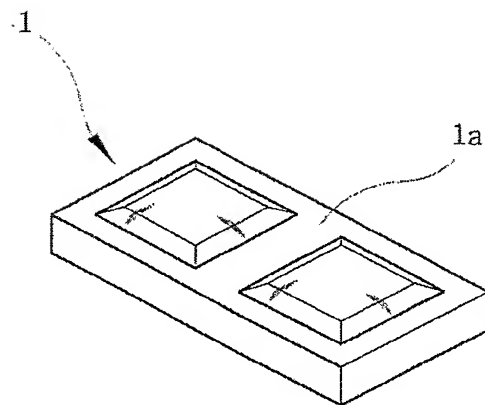


FIG.6



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FIG. 7

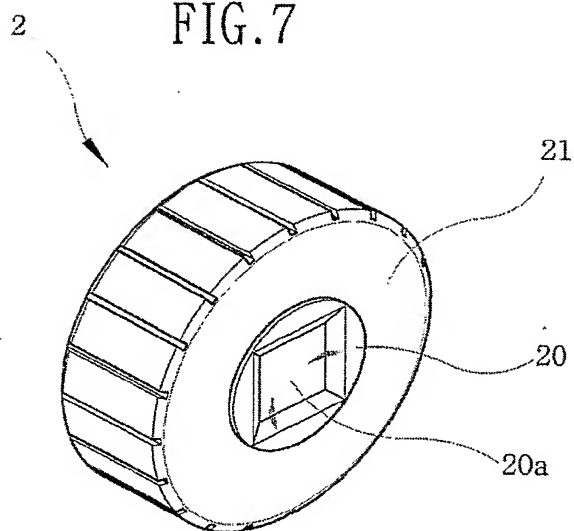
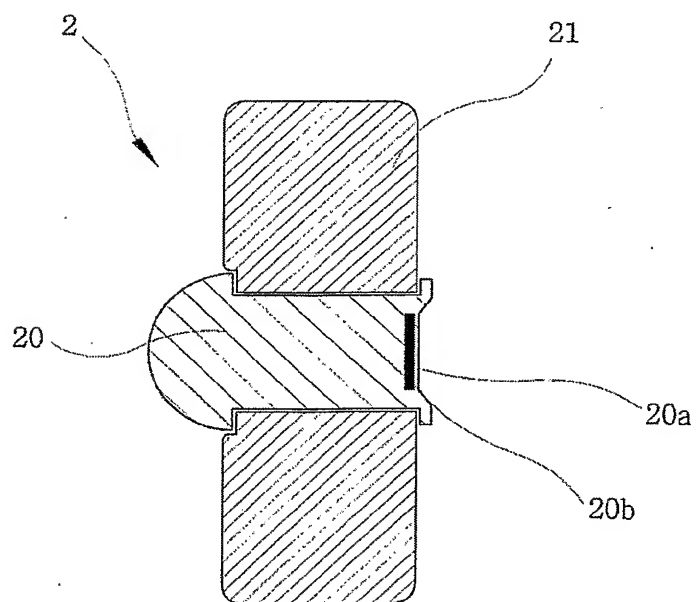
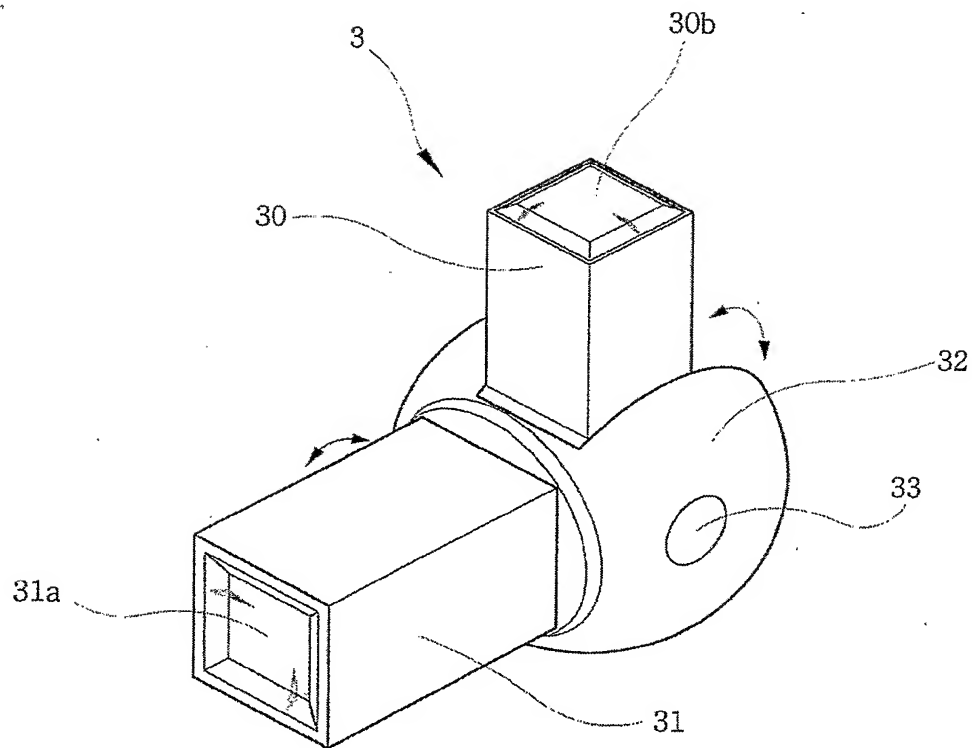


FIG. 8



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FIG. 9



## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/KR03/00187

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC7 A63H 33/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC7 A63H 33/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

KR : IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR20-233577(Oh, kyung yun) Oct.25.2001 See the whole document	1-7
A	KR96-7002337(Tripels) Apr.27.1996 See the whole document	1-7

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Further documents are listed in the continuation of Box C.

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See patent family annex.

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